

IMPRESSION

Who is vhf?

- Since 1988, vhf camufacture AG has been manufacturing CNC machining systems for milling, engraving, drilling, cutting and embossing. Additionally, vhf produces a wide range of tools. The scope of machine sizes – from the application area of micro-machining up to mould making – extends up to a positioning range of several meters.
- We would be glad to answer your questions concerning our CNC machining systems or tools at several trade fairs where we exhibit. Please ask for our trade fair schedule.
- You can directly test us and visit us. On this occasion we can show you the way from importing the modelled data from your CAD software to a perfectly finished crown or bridge. You surely will be surprised how fast you can realize your bridgeworks.



It would be a pleasure for us to send you detailed catalogues with further CNC machining systems or carbide and diamond tools. There you will find extensive technical data of all components and tools

FOR STABLE BRIDGES

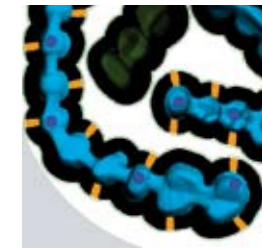
CAM 4-02



CAM without Prior Knowledge

This micro-machining system will be delivered with a CAM software which does not demand any previous knowledge due to its **clearly structured user guidance**. You can import your earlier modelled CAD data via the **standardized STL format** into this open program. The software lets you choose the required blank of plastics or zirconium oxide and then supports you with different **placement aids** in an **optimal utilisation of space** on the blank.

There are just a **few mouse clicks** necessary until you can mill your bridgeworks. You start with placing the **Bars** which connect the framework to the blank. If necessary, you can also place **Drops** which support the framework during the sintering process. It is also possible to **machine** a blank in **several stages**; the teeth which were already milled in a previous pass will be displayed in dark green colour and establish a protected area. Finally, the **milling paths** of the different tools will be **calculated fully automatized**.



**Easy operability,
technical perfection
and a fantastic price.**



€ 32,000.–*

4 Axis Machining System CAM 4-02 Impression

ready for use including high frequency spindle with automatic tool change and clamping device.

Price includes CAM software!

* Price without VAT

also process various blanks in several stages. They will remain in their **fixing devices** and, if required, can be **exchanged** completely **within seconds**, until the blanks are used to full capacity. All **relevant data** concerning blanks, fixing devices and tools have been **stored in the CAM software** – you do not have to bother about such technical details any more.

Once you have arranged your bridgeworks on the blank and placed the bars, a single touch of a button will be sufficient to start the milling process. Furthermore, due to an **automatic tool change**, there is no manual intervention necessary while the machine is operating.

vhf

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Computer-aided manufacturing will increase the **machining speed** and the **surface quality** of your bridgeworks at the same time. Using our new micro-machining system CAM 4-02 Impression you can quickly and comfortably mill **temporary appliances** as well as **crown and bridge frameworks** with up to fourteen units. If the system is equipped with the appropriate minimum quantity lubrication which is optionally available, you can even mill **harder sorts of metal**. Thanks to three axes plus a **rotary axis**, your blank will be **processed from all sides** without having to re-check it. By means of the two provided fixing devices, you can

Your Advantages

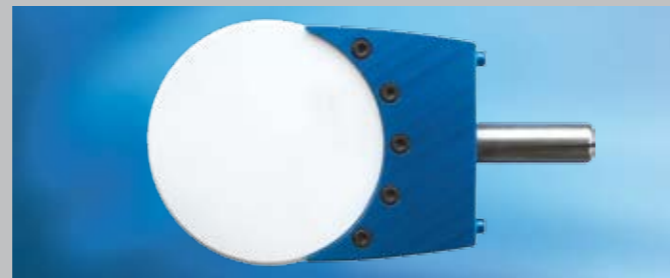
- **universally applicable** for producing **temporary appliances** as well as **crown and bridge frameworks** with up to fourteen units
- using the optional minimum quantity lubrication, you can **directly machine harder sorts of metal**
- the **shapely table-housing** finds place everywhere – due to its **closed casing** no dust particles and hardly no noise spread outside during the machining process
- the integrated high frequency spindle is very silent and enables **high rates of feed** – the precision bearing of the spindle axis ensures a **top surface-quality** of the treated workpieces
- high-grade automatisaton due to **automatic tool change** – the whole machining process from the initial rough machining up to the ultimate finishing will be performed **without intervention** of the operator
- quick and easy **exchange of workpieces** within seconds due to pneumatic collet chuck
- highest accuracy due to **automatic axis measurement and axis compensation**
- intelligent **suction concept** keeps working area clean and protects machine against soiling
- **open system** – via the standardized STL format you can import three-dimensional data from any CAD program into the provided CAM software
- **very easy operation** through combined CAM and control software – no previous knowledge in milling necessary



Detail view of the top of a zircon blank – you can mill bridge frameworks with up to fourteen units.

Technical Data: CNC Machining System CAM 4-02 Impression

- **Four-axis Machining System CAM 4-02 Impression**
positioning range (x/y/z): 120 x 90 x 70 mm · 4th axis: rotary axis free from backlash with pneumatic collet chuck · precise ball screw spindles for the 3 linear axes with 2.5 mm lead, motor resolution < 1 µm · repetition accuracy +/- 0.003 mm · ground steel precision guide rails · very low noise-level · complete encapsulation of working area with closable front cover · additional encapsulation of spindle and tool change during the machining process, thus high level of operating safety · working area illumination · little required space – dimensions approximately 620 x 530 x 515 mm (width/depth/height) · weight approximately 80 kg
- **Rotary Axis with Collet Chuck and Fixing Device**
rotary axis with highest true running accuracy for processing workpieces on their full circumference of 360 degrees · harmonic drive free from backlash · automatic measurement of rotary axis and automatic axis compensation for absolutely exact results · pneumatic collet chuck for exchanging the fixing devices · two provided fixing devices for round universal blanks with 98 mm diameter and a thickness of 12 mm to 26 mm · other fixing devices are optionally available
- **Controller**
great smoothness of running, powerful and accurate due to microstep operation · high processing speed due to exponential acceleration ramps and automatic change-over to full step mode · simultaneous interpolation of 4 axes



Provided fixing device for universal blanks – at the touch of a button you can quickly exchange different fixing devices.

- **High Frequency Spindle SF 170P**
nominal power under constant load (S1): 170 W · maximum power output (P_{max}): 240 W · rotational speed range up to 60,000 RPM · collet chuck 3 mm · precision shaft with double bearing: radial deviation at the internal cone < 1 µm · automatic tool change station for 5 tools with automatic length detection · tool breakage monitoring · compressed air monitoring for automatic tool change · prepared for minimum quantity lubrication
- **Dust Extraction**
extensive hole plate in working area for an efficient dust extraction · switched automatically by controller · connector for hose at the side of the housing · automatically controlled 230 Volt outlet for an external suction unit · delivery optional with industrial vacuum cleaner
- **Software**
provided CAM software which is especially optimized for dental technology · tool and material library · definition of own tools, materials and processing strategies possible · integrated control software for a comfortable output of the data which has been generated by the CAM software
- **Service**
favourable rates for delivery, assembly and introduction · 2 years warranty on all components of the system · free hot-line



Selection of different tools: some of them have an extra long free grinding which makes it easier to carve out finest details in the finishing pass.

Do You Need Something More?

Five-axis Extension

If you would like to produce drilling templates or undercut bridgeworks, we recommend to use the five-axis extension. With this optional device the blank will be rotated steplessly up to 360 degrees on the plane of its fixing device. So you can reach positions with the milling cutter which are not accessible during four-axis operation. The five-axis extension is retrofittable.

Minimum Quantity Lubrication

Using an electronically controlled minimum quantity lubrication, you can directly process harder sorts of metal. It creates finest liquid particles which reduce – due to their lubricating effect – the generation of heat during the machining process. This optional external unit with liquid tank and instruments is also retrofittable as CAM 4-02 Impression is already internally equipped with all necessary pipes.

Cabinet

On request, there is also a stable cabinet available which offers much space for your blanks, tools, fixing devices and accessories. Its massive granite plate underlines the high-value appearance of your system.



Detail view of the machining process at the bottom side of a zircon blank with a special dental radius milling cutter.